

REMARKS

Claims 2, 17, and 19-31 are pending in this application. Claims 21-23 are withdrawn from consideration by the Examiner. By this Amendment, claims 24-31 are added. Support for the new claims may be found, for example, in the specification at page 24, lines 12-17, page 28, line 20 to page 29, line 7, and page 44, lines 4-12. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejection Under 35 U.S.C. §§102/103

The Office Action rejects claims 2, 17, 19, and 20 under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as having been obvious over JP-A-04-319260 to Watanabe et al. ("Watanabe"). The rejection is respectfully traversed.

Claim 2 requires that "at least a part of the zirconium on said surface is present as lithium zirconate" (LiZrO_3). Watanabe does not disclose and would not have rendered obvious this claim feature.

Instead, Watanabe discloses that "[z]irconium oxide (ZrO_2) was added to a mixture of Li_2CO_3 and CoCO_3 with a 1:1 atomic ratio of Li and Co." See paragraph [0010]. Watanabe does not disclose that at least a part of the zirconium is lithium zirconate.

Additionally, Watanabe discloses that "the zirconium that was added was zirconium oxide, but other zirconium compounds can be used." Watanabe does not specify any other zirconium compounds besides zirconium oxide. This general teaching would not have rendered obvious a positive electrode active material comprising lithium zirconate because there is no indication in Watanabe that a positive electrode active material should comprise lithium zirconate.

Thus, Watanabe does not anticipate and would not have rendered obvious claim 2. Claims 17, 19, and 20 depend from claim 2 and, thus, also are not anticipated and would not

have been rendered obvious by Watanabe for at least the same reasons. Reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection Under 35 U.S.C. §103

The Office Action rejects claims 2, 17, 19, and 20 under 35 U.S.C. §103(a) as having been obvious over Watanabe in view of JP-A-09-147916 to Inoue et al. ("Inoue"). The rejection is respectfully traversed.

Inoue does not disclose lithium zirconate, much less a positive electrode active material in which at least a part of the zirconium on said surface is present as lithium zirconate. Similar to Watanabe, Inoue discloses zirconium oxide, but for use in a protective layer. See claims 9 and 10. Thus, Inoue fails to cure deficiencies of Watanabe discussed above.

Additionally, an ordinarily skilled artisan would not have combined Watanabe and Inoue in a manner that would have yielded the positive electrode active material of claim 2. Watanabe and Inoue disclose different ways of applying oxides and different manufacturing processes that do not lend themselves to being combined as proposed by the Office Action. Specifically, an ordinarily skilled artisan would not have applied aluminum or magnesium disclosed by Inoue in the same manner as zirconium is applied in Watanabe.

Watanabe discloses that lithium carbonate and cobalt carbonate were mixed at a one-to-one atomic ratio of Li and Co. See paragraph [0010]. Zirconium oxide was added to the thus-obtained mixture and the mixture was baked in air to obtain a positive electrode active material. Id.

Inoue discloses that magnesium may be present on its protective layer. In Example 1, the positive electrode active material is fixed over a metal foil with a binding agent to form a positive electrode a. A water-soluble polymer containing alumina or magnesium is coated on positive electrode a to form positive electrode b. See paragraphs [0058]-[0060]. Thus, in

Inoue, the positive electrode active material is substantially apart from alumina or magnesium. Furthermore, alumina or magnesium is not uniformly present on the particle surface of the positive electrode active material. Thus, any combination of Watanabe and Inoue would not have aluminum or magnesium that is uniformly present on the particle surface.

Additionally, in Inoue, the material of the protective layer that was baked was aluminum or magnesium. In contrast to Watanabe, Inoue does not disclose adding aluminum oxide or magnesium oxide as the material for the positive electrode active material. Instead, Inoue discloses coating the material containing aluminum oxide or magnesium oxide over the electrode.

Thus, if Watanabe and Inoue would have been combined, the combination would not have yielded the claimed positive electrode active material. On the other hand, the present application discloses that aluminum and magnesium are coprecipitated with zirconium for use in a positive electrode active material.

For at least these reasons, the applied references would not have rendered obvious claim 2. Claims 17, 19, and 20 depend from claim 2 and, thus, also would not have been rendered obvious by the applied references for at least the same reasons. Reconsideration and withdrawal of the rejection are respectfully requested.

III. New Claims

Claims 24-31 are newly presented. Claims 24-31 respectively depend from claim 2 and, thus, distinguish over the applied references for at least the reasons discussed above.

Additionally, claims 28-30 require that zirconium exists on the surface of the lithium-transition metal composite oxide in a ratio of 0.01 to 2 mol% zirconium, 0.02 to 0.3 mol% zirconium, and 0.04 to 0.25 mol% zirconium, respectively. Watanabe exemplifies zirconium ratios of 1, 3, 5, 7, and 10 mol% and exemplifies not using zirconium (0 mol%). See

paragraph [0011], Table 1. Watanabe teaches that "it is appropriate for the amount of zirconium to be approximately 5%." See paragraph [0019]. Watanabe further teaches that zirconium ratios lower than 5 mol% did not provide significant results and that zirconium ratios greater than 5 mol% did not yield significant improvement over the 5 mol% ratio. See paragraphs [0018]-[0019] and Figure 3. Thus, claims 28-30 patentably distinguish over Watanabe.

Prompt examination and allowance of the new claims are respectfully requested.

IV. Rejoinder

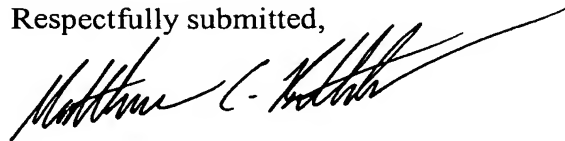
Because the examined species is allowable for at least the reasons discussed above, the withdrawn species should be rejoined. Prompt examination and allowance of the withdrawn species are respectfully requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Request for Continued Examination

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